LEPTOTYPHLOPS HUMILIS IN DEATH VALLEY, CALIFORNIA

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Leptotyphlops humilis has been recorded from six localities in Death Valley, California (Turner and Wauer, 1963). Herein are reported two new collection localities. In addition, environmental factors are discussed which may relate to distribution and physiology of the species.

In April, 1966, a single *Leptotyphlops humilis* was collected in the extreme southern end of the valley at Saratoga Springs, San Bernardino Co., California. The snake was found in leaf litter on coarse, moderately packed soil beneath a large salt cedar tree (*Tamarix aphylla*). In April, 1967, five *L. humilis* were taken in the extreme northern end of the valley near McClean Springs, Inyo Co., California. The specimens, along with several cast skins, were found in a 77 cm deep depression in dark, silty soil overlain by 15-21 cm of salt crust. The vegetation at the locality is largely salt grass (*Distichlis spicata*). Both localities are within Death Valley National Monument. All specimens are on deposit in the Biology Museum, University of Nevada, Las Vegas.

Klauber (1940) noted that specimens of *Leptotyphlops* from Death Valley could be referred to *L. humilis humilis* (Baird & Girard), even though they showed a slight increase in scale counts and color characteristic of *L. h. cahuilae* Klauber. Klauber (1940) pointed out that pigmentation and scale counts are diagnostic for *L. h. humilis* and *cahuilae*. Subsequent authors have followed Klauber's (1940) nomenclature.

The specimen from Saratoga Springs has the number of median dorsal scales (273), number of scale rows (14) and number of pigmented scale rows (7) characteristic of *L. h. humilis*, but the pigmentation is light brown, as seen in *L. h. cahuilae*, and the most ventro-lateral scale row on each side is only partially pigmented. The specimens from McClean Springs have a higher dorsal scale count than is characteristic of *L. h. humilis* (X= 281; range, 277-289) and are pigmented like the Saratoga Springs specimen. The other characteristics are those of *L. h. humilis* (no. scale rows, 14; no. pigmented rows, 7). I would, therefore, follow Klauber's (1940) nomenclature and refer all of the specimens to *L. h. humilis*, with the observation that they tend toward *L. h. cahuilae* in color and number of dorsal scales, especially in the northern end of the valley.

Little is known about the environmental factors which affect *L. humilis*. Klauber (1931, 1940) recorded soil types and ambient temperatures associated with surface-active *Leptotyphlops*, and Turner and Wauer (1963) recorded elevations and plant commun-

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Table 1—Summary of known and estimated chemical and physical characteristics of ground water and soil, and elevation, associated with collection localities of *Leptotyphlops humilis* in Death Valley, California.

N.D.=no data.

	% soil salts	pH soil	pH ground water	% TDS ground water	soil type	Elevation (Meters)
Bennetts Well	< 2.7 (1)	ca. 10.0 (1)	7.9 (1)	.03-.04 (1)	silt (4)	-75.8
Shortys Well	2.7 (1)	< 10.0 (1)	6.9 (1)	.07 (1)	silt (4)	-75.8
Gravel Well	2.7-3.8 (1)	ca. 10.0 (1)	6.8-7.0 (1)	.13 (1)	sandy gravel (4)	-60.6
Saratoga Springs	1.6-1.8 (2)	10.7-11.1 (2)	7.8-8.5 (3)	< .50 (3)	alluv. gravel	59.1
Furnace Creek	.25-.50 (1)	< 10.0 (1)	ca. 7.0 (1)	.20 (1)	silty gravel (4)	-54.1
Cow Creek	2.7-3.8 (1)	ca. 10.0 (1)	7.5-8.5 (1)	.15-.57 (1)	alluv. gravel (4)	-54.1
McClean Springs	2.4-3.8 (1)	> 10.0 (1)	7.6 (1)	1.73-2.80 (1)	silt	-27.6
Wildrose	< 2.0 (1)	N.D.	N.D.	N.D.	rocky alluv. (4)	1363.6

(1) Hunt, et al., 1966
(2) Bradley, 1970.
(3) Deacon, 1968
(4) C.G. Hansen, pers. comm.

ities at collection localities in Death Valley. Another species, *L. dulcis*, is known to aggregate in apparent response to soil moisture (McCoy, 1960) and to show definite soil type and temperature preferences (Clark, 1967).

Table 1 summarizes certain characteristics of soil and ground water, and gives elevations at the eight localities in Death Valley where *L. humilis* has been found. The data have been taken from several sources (Hunt, et al., 1966; Deacon, 1968; Bradley, 1970; C. G. Hansen, pers. comm.). All localities are associated with surface water or stream beds and are therefore thought to have moderate to high amounts of soil moisture. Ambient temperatures at the collection sites are not available.

Soil salinity at McClean Springs may be higher than indicated by the data at certain times; i.e., after rains. The salinity levels at McClean Springs and some of the other localities may indicate an efficient osmoregulatory mechanism or resistance to environmental salinity in *L. humilis*.

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